

## **REMARKS**

### A. Background

Claims 2, 6 and 11 were pending in the application at the time of the Office Action. Claims 2, 6 and 11 were rejected as being obvious over cited art. By this response applicant has amended claims 2, 6, and 11. As such, claims 2, 6, and 11 are presented for the Examiner's consideration in light of the following remarks.

### B. Proposed Amendments

Applicant has herein amended claims 2, 6 and 11 to further clarify, more clearly define, and/or broaden the claimed inventions to expedite receiving a notice of allowance. Specifically, claims 2, 6 and 11 have been amended to recite that the amount of oxygen deficiency d is "controlled based on a monotonically increasing relationship between the oxygen deficiency and an absorption coefficient." The amendments to the claims are supported in the application at least by Figure 3 and paragraph [0018] of the specification as originally filed. In view of the foregoing discussion, applicant submits that the amendments to the claims do not introduce new matter and entry thereof is respectfully requested.

### C. Rejection Based on 35 USC 103

Paragraph 5 of the Office Action rejects claims 2 and 6 under 35 USC § 103(a) as being obvious over U.S. Patent No. 6,043,940 to Kamiyama et al. ("*Kamiyama*") in view of Maciolek et al. ("*Maciolek*"). Paragraph 6 of the Office Action rejects claim 11 under 35 USC § 103(a) as being obvious over *Kamiyama* in view of *Maciolek* and further in view of U.S. Patent No. 6,559,084 to Fujikawa et al. ("*Fujikawa*"). Applicant respectfully traverses these rejections.

As argued in the prior response submitted by Applicant on May 12, 2008, Applicant pointed out that *Kamiyama* was silent as to the amount of oxygen deficiency disclosed in the  $\text{KTaO}_3$  used therein. In the current Office Action the Examiner asserts that because of this, and because *Kamiyama* only discloses “ $\text{KTaO}_3$ ”, that “this is equivalent to a ‘d’ value of 0.” Office Action at page 2. Applicant respectfully disagrees.

$\text{KTaO}_3$  is a perovskite oxide. As noted in the current specification, it is well known in the art that a perovskite oxide has at least some oxygen deficiency, the amount of which depends on manufacturing conditions and heat treatment conditions. See Paragraph [0018]. Thus, by simply reciting “ $\text{KTaO}_3$ ” *Kamiyama* is not signifying that the amount of oxygen deficiency d is 0; rather, *Kamiyama* is, as is known in the art, simply choosing to ignore the amount of oxygen deficiency when reciting “ $\text{KTaO}_3$ ”. However, as noted above, the oxygen deficiency d is nonetheless present in the  $\text{KTaO}_3$ . Therefore, even though *Kamiyama* discloses a chemical formula of  $\text{KTaO}_3$ , *Kamiyama* does not disclose or suggest “**the amount of oxygen deficiency d is  $0 \leq d < 10^{-7}$** ,” as recited in claims 2, 6, and 11.

In contrast, the cubic crystal material provided by various embodiments of the present application comprises KT ( $\text{KTaO}_{3-d}$ ) in which the amount of oxygen deficiency d is maintained below  $10^{-7}$ . This is so because the amount of oxygen deficiency d in the  $\text{KTaO}_{3-d}$  in various embodiments of the present application is controlled by changing an oxygen partial pressure in atmosphere using a monotonically increasing relationship between the oxygen deficiency and an absorption coefficient. This allows an internal optical transmittance of the optical medium to be more than 90% per cm. See, e.g., Figure 3 and paragraph [0018] of the current application.

*Maciolek* is cited simply for allegedly disclosing a cubic KTaO<sub>3</sub>, and *Fujikawa* is cited simply for disclosing optical material that can be made into prisms. Applicant submits that neither *Maciolek* nor *Fujikawa* cure the deficiencies of *Kamiyama*, discussed above. That is, *Maciolek* and *Fujikawa* also fail to disclose or suggest “**the amount of oxygen deficiency d is  $0 \leq d < 10^{-7}$** ,” as recited in claims 2, 6, and 11. Accordingly, Applicant respectfully requests that the obviousness rejections with respect to claims 2, 6, and 11 be withdrawn.

No other objections or rejections are set forth in the Office Action.

D. Conclusion

Applicant notes that this response does not discuss every reason why the claims of the present application are distinguished over the cited art. Most notably, applicant submits that many if not all of the dependent claims are independently distinguishable over the cited art. Applicant has merely submitted those arguments which it considers sufficient to clearly distinguish the claims over the cited art.

In view of the foregoing, applicant respectfully requests the Examiner’s reconsideration and allowance of claims 2, 6, and 11 as amended and presented herein.

The Commissioner is hereby authorized to charge payment of any of the following fees that may be applicable to this communication, or credit any overpayment, to Deposit Account No. 23-3178: (1) any filing fees required under 37 CFR § 1.16; (2) any patent application and reexamination processing fees under 37 CFR § 1.17; and/or (3) any post issuance fees under 37 CFR § 1.20. In addition, if any additional extension of time is required, which has not otherwise been requested, please consider this a petition therefor and charge any additional fees that may be required to Deposit Account No. 23-3178.

In the event there remains any impediment to allowance of the claims which could be clarified in a telephonic interview, the Examiner is respectfully requested to initiate such an interview with the undersigned.

Dated this 20th day of October 2008.

Respectfully submitted,

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